

Remarks/Arguments:

Claims 1-30 are pending in the application. Claims 1-16 are withdrawn from consideration as drawn to a non-elected invention.

35 U.S.C. § 103

Claims 17-26 and 28-30 are rejected under 35 U.S.C. § 103(a) as unpatentable over Rivera et al. (US 6,126,997; "Rivera"). The Office Action states that Rivera teaches all of the instant claim limitations, with the exception of not teaching the use of both an organo-functional silane AND a group IV-B element, but that Rivera teaches using those individually in formulations such as those claimed and that combining them would therefore be *prima facie* obvious. Applicants traverse this rejection for the following reasons.

Table 1 of Rivera shows an overall "pass" rating for treatments involving only a silane (Examples 1 and 2), but treatments using only a polymer blend having a plurality of carboxyl and hydroxyl groups and a group IV-B element failed overall (Examples 3 and 4) when used on magnesium surfaces (the only type of surface tested). It is not clear why the latter experiments failed, but based on this example (the only one provided by Rivera), there would be no expectation of success (i.e., no expectation of achieving a "pass" rating) in combining the two treatments. Rather, the skilled artisan would expect such blending to result in performance that reflected at best an average of the two results, i.e., something worse than the performance provided by silane alone. Indeed, Rivera does not in any case suggest combining the two treatments into a single formulation. Rather, he always discusses them as alternatives.

However, Applicants have found that formulations including both constituents are capable of providing surprisingly good, and indeed unexpected, results. For example, such combinations can provide coatings showing no loss of adhesion in the Post Opening test (impact dimple), a result that could not be obtained by use of the polymer blend/group IV-B element alone (page 12 of the application). It is clear that the improvement was not due merely to adding more total coating material, because at higher levels of silane the results began to get worse (composition 4). It is apparent that some sort of interaction or cooperative effect occurs between the silane and the polymer blend/group IV-B compositions, and such an interaction/cooperation is not in any way suggested by Rivera.

In another example, adhesion of bronze polyester paint to a heavily oxidized aluminum surface (a very demanding test) was very good when a combination of silane and polymer blend/group IV-B element was used according to the invention; in contrast, omitting the silane resulted in failure in the salt fog (corrosion) test and poor performance in the 1-hour boiling water test (page 14).

As noted in the MPEP at 716.02(a):

"A greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness ... of the claims at issue." *In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). In *Corkhill*, the claimed combination showed an additive result when a diminished result would have been expected. This result was persuasive of nonobviousness even though the result was equal to that of one component alone. Evidence of a greater than expected result may also be shown by demonstrating an effect which is greater than the sum of each of the effects taken separately (i.e., demonstrating "synergism"). *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989).

Applicants submit that the methods of the present invention indeed show an additive result when a diminished result would have been expected, and thus are not obvious. Accordingly, the rejection should be withdrawn.

With respect to claims 18-20, the Office Action asserts that the ratio of silane to polymer blend is a result-effective variable, affecting "various properties of the composition such as viscosity, cross-linking density, etc.," and that it would therefore have been obvious to optimize the ratio by routine experimentation. Applicants note that this issue is relevant to claims 19 and 20, but not claim 18, and traverse the rejection for the following reasons.

A particular parameter must first be recognized in the prior art as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), emphasis added.

A result-effective variable must by definition refer to some specific result against which effectiveness can be measured. The Office Action argues that such the results whose performance is to be optimized are "various," and include viscosity and cross-linking density. However, there is no teaching in Rivera as to the importance of either of these parameters, nor in any case an indication of how (or even whether) the ratio of silane to polymer blend would affect them. And, even if the reader of Rivera nonetheless somehow arrived at the idea to vary the silane/polymer blend ratio to exert control over viscosity or cross-linking density, which variable would he try to optimize? The viscosity, the cross-linking density, or indeed one of the "various" other parameters? It would defy logic to assert that optimization of a variable for an undefined purpose would lead to any particular value of that variable, since optimizing for different purposes would be expected to lead to different optimal values. In particular, there is no evidence that optimization of the silane/polymer blend ratio for any of these purposes would lead to the ratios claimed in claims 19 and 20, even if one of these parameters were somehow singled out for optimization.

In accord with the foregoing points, Applicants submit that Rivera is deficient as a reference against claims 19 and 20 because this reference does not teach or suggest all of the claim elements, specifically the recited ratios of silane to polymer blend. Accordingly, the rejection should be withdrawn.

Applicants also note that claim 25 recites the treatment of an aluminum surface. In contrast, Rivera teaches only magnesium as a suitable substrate for his compositions. It will be appreciated that the effectiveness of any given composition on magnesium is not a predictor of effectiveness on other metals, and in particular aluminum as recited in claim 25. Rivera fails to disclose this claim feature, and is therefore deficient as a reference against claim 25. Thus, the rejection of claim 25 should be withdrawn.

Claim 27 is rejected under 35 U.S.C. § 103(a) as unpatentable over Rivera as applied to claim 17, and further in view of Petrole et al. (US 5,700,523; "Petrole"). The Office Action asserts that Petrole teaches the treatment of aluminum substrates with "a similar composition," but makes no specific citations. This assertion is error, because Petrole does not teach a composition comprising a silane and a polymer blend as claimed. Rather, he very explicitly teaches sequential treatment of a metal

with 1) a silicate, 2) a silane, and 3) a polymer blend combined with a group IV-B element.¹ He states that:

It is believed that this result is caused by the complex formed by the interaction of the three layers formed on the metal surface by the first, second, and third baths. This complex is strongly bonded to the metal surface on one side and to a paint layer or other decorative layer on the other side. The inclusion of a silicate in the first bath serves to suppress etching of the metal surface and dissolution of the metal. In addition, the silicate apparently forms complexes with the metal surface. The silane layer bonds the subsequently applied organic layer (such as the pretreatment or the paint) to the silicate complexes formed at the metal surface or directly to the metal surface. Finally, the pretreatment serves to enhance bonding of the paint or other decorative layer to the metal surface or to complexes formed with the silicate and/or silane layers. In this way, corrosion resistance and paint adhesion are significantly improved.²

Thus, the reader of Petrole learns that it is desirable to have separate layers of silicate, silane, and polymer blend, and therefore this reference teaches away from combining the silane with the polymer blend as presently claimed. A reference that teaches away from a claim cannot render that claim obvious, and thus the rejection is improper and should be withdrawn.

Obviousness-Type Double Patenting

Claims 17-26 and 28-30 are rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 11-15 of Rivera, and claim 27 is similarly rejected over claim 11 of Rivera in view of Petrole. The Applicants respectfully traverse these rejections as follows, beginning by providing two passages from the MPEP.

"...a double patenting rejection must rely on a comparison with the claims in an issued or to be issued patent, whereas an obviousness rejection under 35 U.S.C. 102(e)/103(a) relies on a comparison with what is disclosed (whether or not claimed) in the same issued or to be issued patent."³ [emphasis added]

"Any obviousness-type double patenting rejection should make clear:

(A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and

(B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the patent.

When considering whether the invention defined in a claim of an application is an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art."⁴ [emphasis added]

¹ Petrole column 3, lines 1-16

² Petrole column 4, line 59 to column 5, line 7

³ MPEP 804 III

⁴ MPEP 804 B. 1.

The rejections of claims 17-26 and 28-30 rely upon the disclosure of the Rivera '997 patent as prior art, stating that silane and polymer blend compositions are "taught by the prior art" [apparently referring to Rivera] "to be useful for the same purpose." This use of Rivera's teaching is impermissible, as noted immediately above, and therefore the rejection should be withdrawn. Similarly, the rejection of claim 27 over claim 11 of Rivera in view of Petrole is improper, because the use of Petrole as a secondary reference is impermissible as made clear above. Therefore, the nonstatutory obviousness-type double patenting rejections should all be withdrawn.

Conclusion

For the above reasons, the applicants submit that the rejections have been overcome, and request reconsideration and allowance of claims 17-30. The applicants invite the examiner to contact their undersigned representative, Frank Tise, if it appears that this would expedite examination.

Respectfully submitted,



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